REMOTE PANEL (OPTIONAL)
MAIN PANEL
REMOTE SENSOR

MODEL 4200-IG-2 (Up to 2 Sensors)
MODEL 4200-IG-4 (Up to 4 Sensors)
Industrial Grade Gas Monitor

User Manual

ARJAY ENGINEERING

A Product of Arjay Engineering Ltd.
Oakville, Ontario, Canada

www.ArjayEng.com

MODEL:	
HARDWARE NO.:	
SOFTWARE NO.:	
SERIAL NO.:	

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1.0   INSTRUMENT OVERVIEW

The Arjay Model 4200-IG monitors the inputs from various field sensors to provide a gas concentration display, alarms and interlocks.

The monitoring system is comprised of one main control panel and a minimum of one remote alarm sensor transmitter. The panel can support multiple sensor inputs and signal types as per the part number ordered.

Optional Remote alarm panels can also be added that will display and provide audio/visual alarms.

Local or site specific regulations may apply to your application. Be aware and to comply with all applicable regulations for your installation.
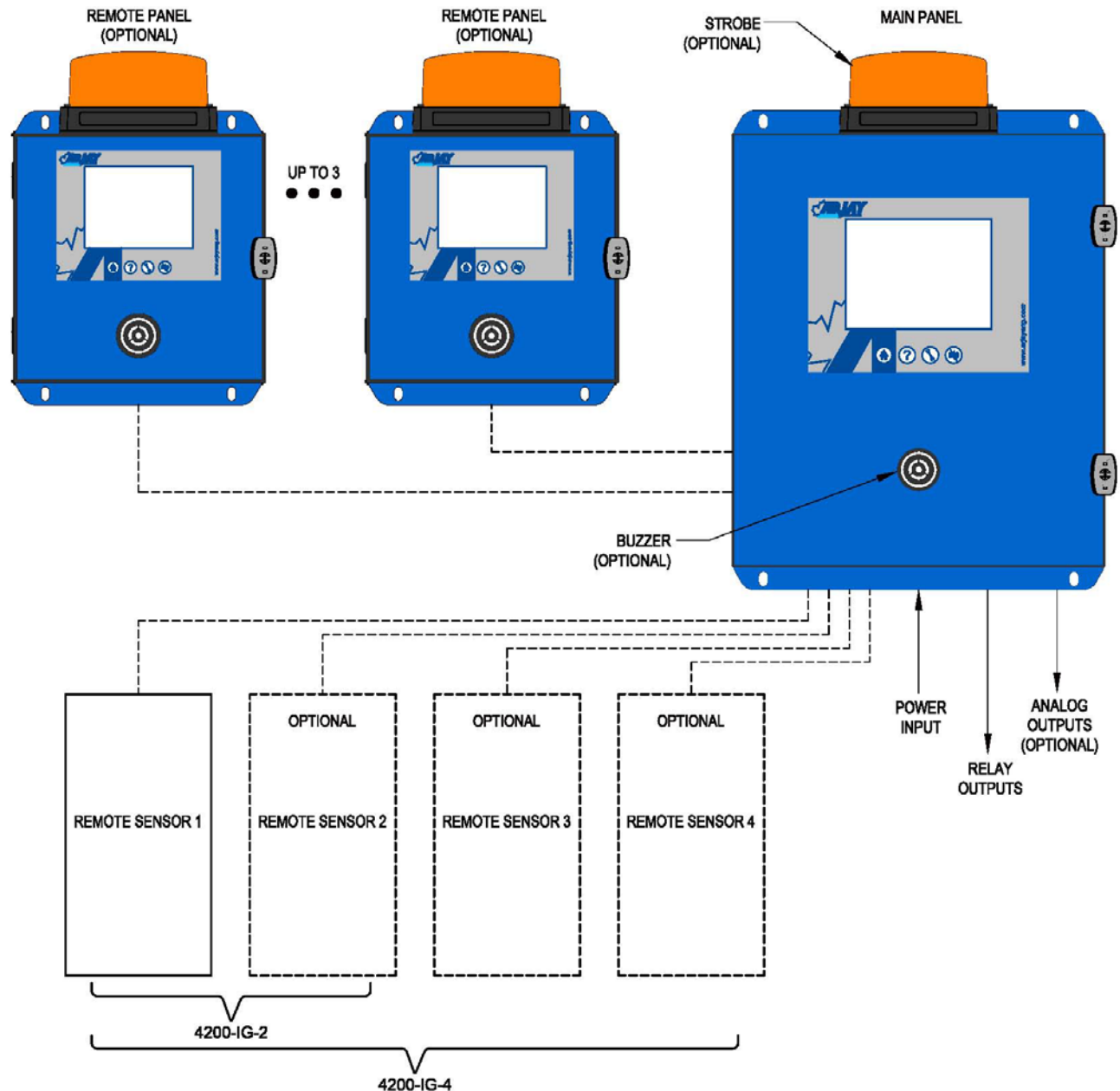
Figure 1 – System Overview

Main Panel

The main panel is a wall mounted touch screen monitor in a general purpose (non-hazardous) location that is accessible for set-up and observation of the display and alarms.

A low alarm relay for each zone is activated at a low setpoint and is indicated by the touch screen flashing yellow.   The screen text also shows a low alarm and indicates the sensor number and gas concentration. The relay resets automatically when the concentration clears below the determined differential setpoint.

A high alarm relay for each zone is activated at a high setpoint and is indicated by the touch screen flashing red. The screen text also shows a high alarm and indicates the sensor number and gas concentration. The relay resets automatically when the concentration clears below the determined differential setpoint.

A high/high alarm relay common to all zones is activated at a high/high setpoint and is indicated by the screen text. The screen text also shows a high/high alarm and indicates the sensor number and gas concentration. An optional beacon and/or buzzer is also available to activate at this setpoint. The high/high alarm maybe latched to be acknowledged and reset after the gas concentration clears.

If latched, the buzzer can be silenced during an alarm condition but the beacon will only turn off when a gas alarm has cleared and has been acknowledged.

The main panel screen provides additional user interface menus for diagnostics, set-up and general help information. Menus can be accessed for viewing but a passcode entry is required to make any changes.

Remote Panel

Remote panels are available to mimic the screen and audio/visual alarms of the main panel. Access to the touch screen menus are password protected on the remote panels.
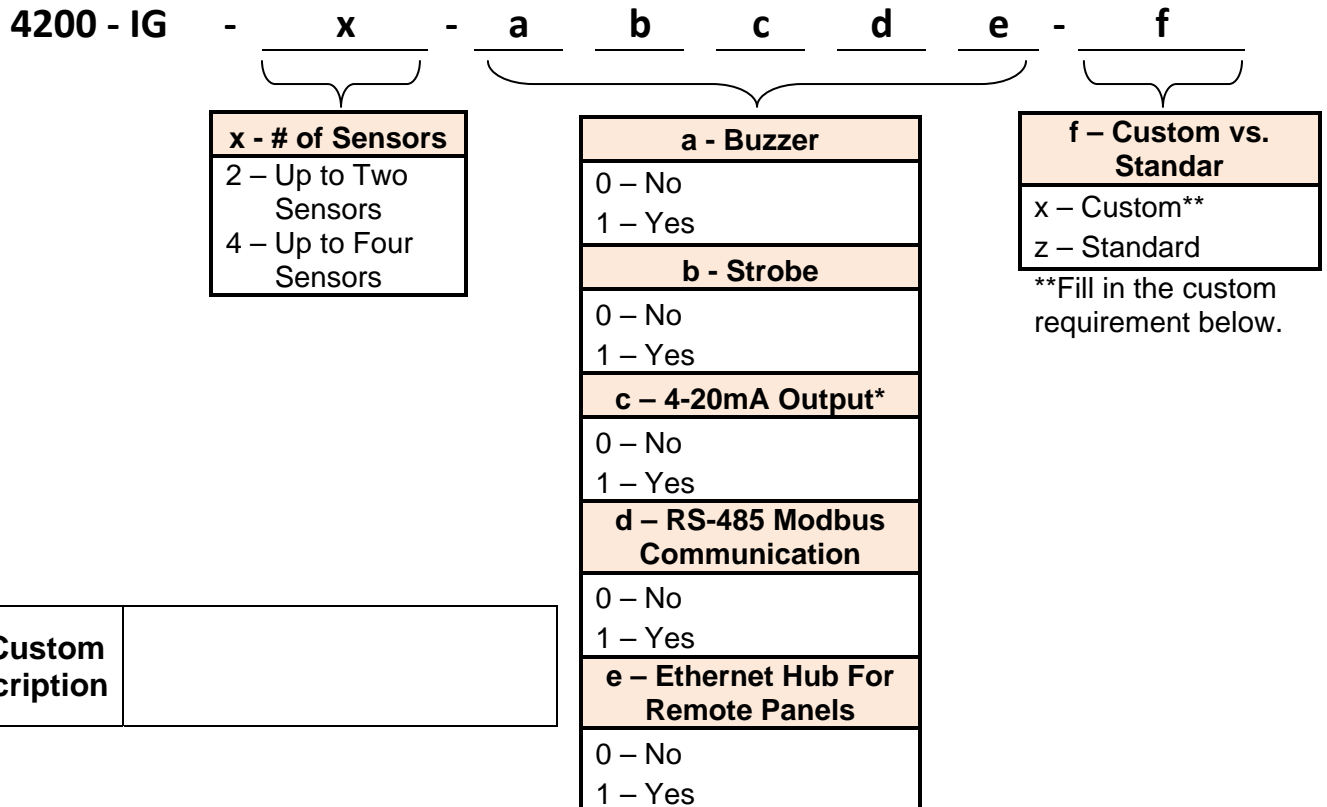
Remote Sensor

The panel will accept one or more sensor inputs depending on the model ordered. Typical inputs are 4-20 mA signals proportional to the gas concentration.

Refer to your sensor transmitter manual for details.   Routine testing and calibration is recommended to ensure the sensor is responsive and accurate.

1.1 Features

- Microprocessor based Controller
- Multiple sensor inputs
- Concentration Display
- Relay alarms on low, high and high/high
- Available analog outputs and RS-485 communication
- Touch Screen interface with passcode protection
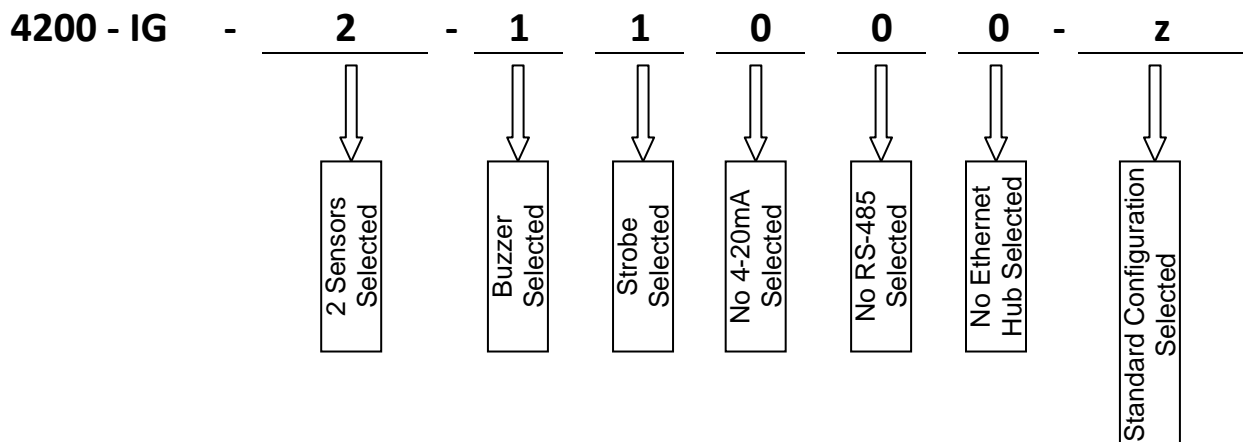- Diagnostic, set-up and Help menus on all screens

1.2 Model Numbers

4200 - IG - x - a b c d e - f

x - # of Sensors
2 – Up to Two Sensors
4 – Up to Four Sensors

a - Buzzer
0 – No
1 – Yes

b - Strobe
0 – No
1 – Yes

c – 4-20mA Output*
0 – No
1 – Yes

d – RS-485 Modbus Communication
0 – No
1 – Yes

e – Ethernet Hub For Remote Panels
0 – No
1 – Yes

*Per Zone

f – Custom vs. Standar
x – Custom**
z – Standard

**Fill in the custom requirement below.

**

x – Custom Description	

Example:

4200 - IG - 2 - 1 1 0 0 0 - z

- 2 Sensors Selected
- Buzzer Selected
- Strobe Selected
- No 4-20mA Selected
- No RS-485 Selected
- No Ethernet Hub Selected
- Standard Configuration Selected

1.3   Specifications

Power Input: 100-240 vac, 50/60 Hz, 1.95A maximum

User Interface:

Touch Screen   Full Colour 6 " display on Main Panel
Monochrome 4" on Remote Panel

Outputs:

Relay Output   DPDT relay, 8 A @ 250 vac dry contacts
Selectable failsafe or non-failsafe
Programmable time delay: 0 – 1 hour; ON and/or OFF
One relay each for:
- Low Setpoint per zone
- High Septoint per zone
- High/High common

Sensor   Accepts various sensor types
Refer to your sensor manual for specifications

Environmental:

Ambient Temperature   0 to +55 °C

Relative humidity   0 to 95% (non-condensing)

Installation Category   II

Pollution Degree   2

Mechanical Specification: Refer to dimensional drawing

2.0   INSTALLATION

NOTE: If any damage to the instrument is found, please notify an Arjay Engineering representative as soon as possible prior to installation.

2.1   Main and Remote Panel Installation

Choose a mounting location in accordance with good instrument practice. Extremes of ambient temperature and vibration should be avoided (see specifications and installation drawing).

Remote panels can be mounted up to 300 meters away from the main panel. Sensors can be mounted up to 1000 feets away from the main panel.

Important Note: The controller is set in Failsafe mode (Factory Default). This means that the relays are in an energized state during normal operation. The N.O. relay contact will be held closed and the N.C. relay contact will be held open during a normal condition. This will allow the relay to return to it's non-energized (shelf) state during an alarm, fault or power failure condition. **Wire accordingly.**

2.2   Sensor Installation

Refer to sensor manual for more specification on location and wire type.

The sensor is to be mounted near the targeted gas source and protected from extremes of temperature and damage. Keep the sensor accessible for routine calibration. Do not block with equipment or store materials or containers in front of the sensor.

Gases may have densities greater than or less than air. Sensors should be mounted accordingly.

Sensors targeting heavier than air gases should be mounted so the bottom of the sensor housing is approximately 250mm to 450mm (10" to18") above floor grade to protect it from damage from cleaning equipment and minor washdown. The sensor should be mounted above any risk of flooding.

Sensors targeting lighter than air gases should be mounted near the ceiling in a location that will be accessible for routine testing.

Sensor location is application specific and may need to be in accordance with local regulations or engineered recommendations.

2.3   Electrical Installation

Refer to the drawings provided by the contractual engineer for your project and the drawings included with this manual.
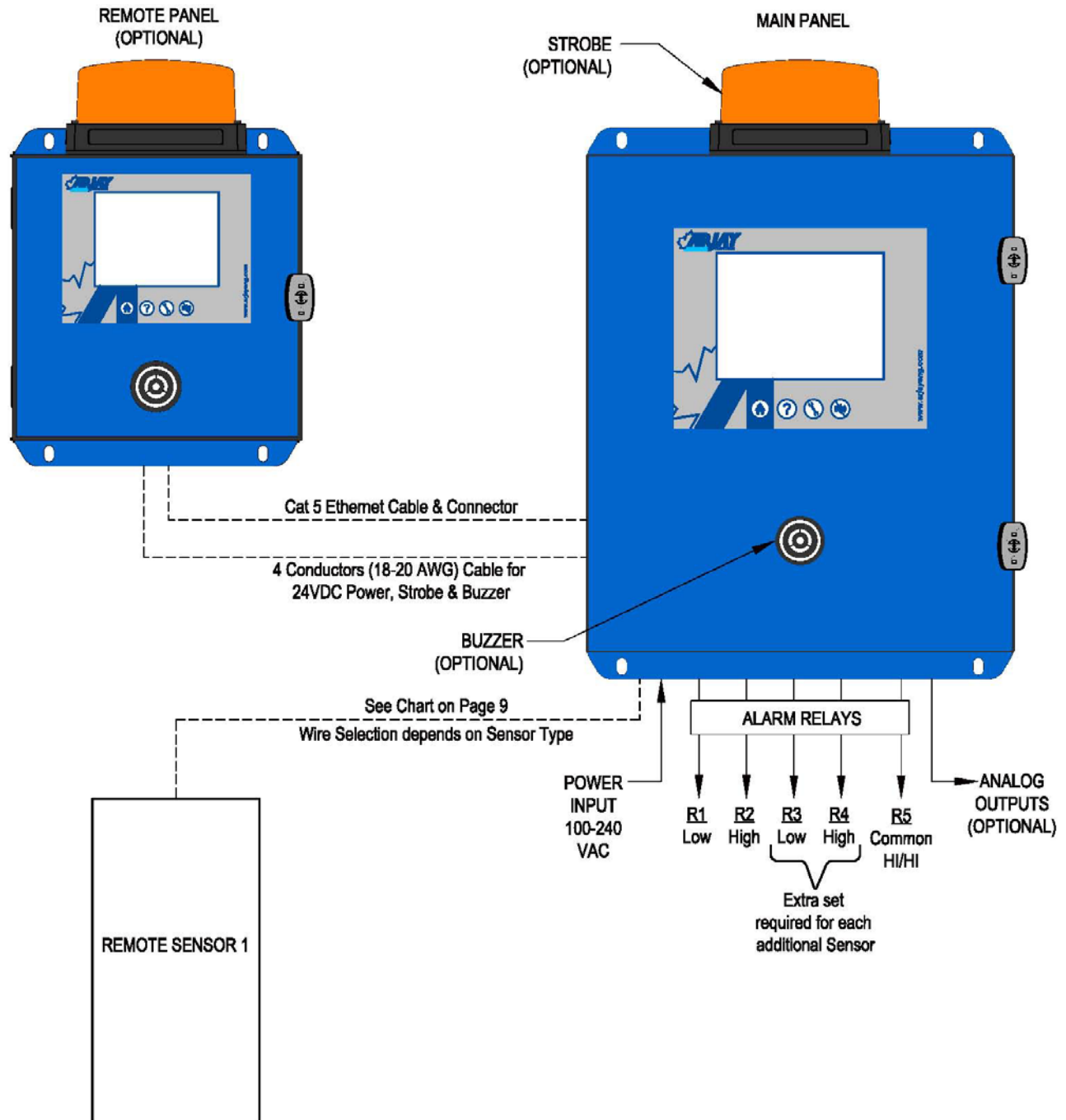
Figure 2 – Electrical Installation Overview

Wiring Chart (Depends on Sensor Selection)

Two wire Loop Powered Transmitters (Sensor)*

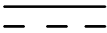| Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
HLM-2000-TX	+ 24VDC Power Input - Signal Output	24VDC Power Output Common (Not Used) + 4-20mA Input

Three wire Loop Powered Transmitters (Sensor)*
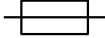
Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
HLM-2000-EX EC-Gold EC-Gold Dual IR-200	+ 24VDC Power Input -Negative + 4-20mA Output	+ 24VDC Power Output Common + 4-20mA Input

Four wire Loop Powered Transmitters (Sensor)*

Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
IR-350	+ 24VDC Power Input -Negative + 4-20mA Output -Negative	+ 24VDC Power Output Common + 4-20mA Input

*Shielded wire is recommended on all installation.
 Maximum wire length 1,000 feets @20 AWG.

2.4   Glossary of Symbols

Attention, consult accompanying documents
Attention, veuillez consulter les documents ci-joints.

Protective Earth
Terre de protection

Fuse
Coupe-circuit; fusible

Direct Current (DC)
Courant continu

Normally open relay contacts
Contacts travail

Normally closed relay contacts
Contacts Repos

Power off
ArróÕ (mise hors tension)

Power on
Marche (mise sous tension)

L Live
Sous tension

N Neutral
Neutre

G Ground
Terre

3.0   STARTUP AND CALIBRATION

3.1   Startup

Check that the power wiring, sensor and remote panel connections, and interfaced equipment are wired in accordance with the electrical installation drawings.

Power On the unit.

The main screen will light up and run through initialization. After any operator power start up or power interruption, the display will indicate it was non-gas power-up condition and that it must be acknowledged by an operator to proceed.

The main and remote panels are set to factory defaults or customer specifications. The sensor is factory tested prior to shipment. As such, the system will be operational upon start-up.

After the power-up is acknowledged, confirm the screen reads similar to the following.
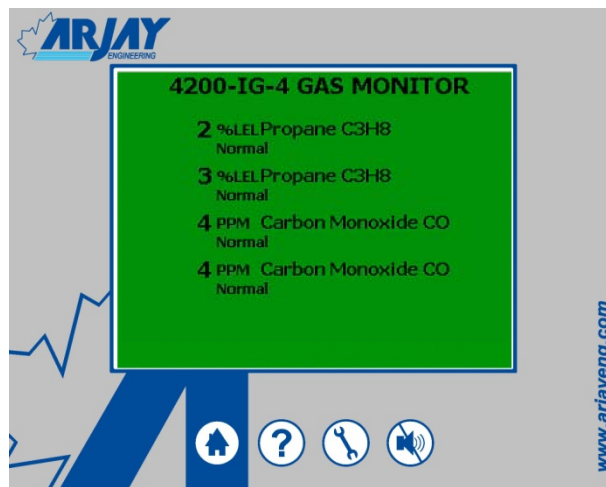

Figure 3 – Startup Main Screen View

3.2   Screen Menu Background Information

3.2.1   Keypad Main Menu Entry

Below the touch screen are 4 touch keys.

Home

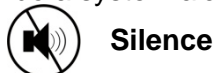At any time, you can press the Home Key to return directly to the Home Screen

Help

This provides an overview of the system operation and components. Contact details for technical help are included at the end of the text.

Tools

Access this section to view or configure the screen and control settings, view diagnostics or to do a system alarm test.

Silence

During an alarm condition the audio can be silenced. Silencing at any panel will silence all panels. The audio alarm will automically re-set when the alarm clears.

4.0   SYSTEM CONFIGURATION

This section describes the screen, alarm and interface features accessed through the Tools on the Main Panel.
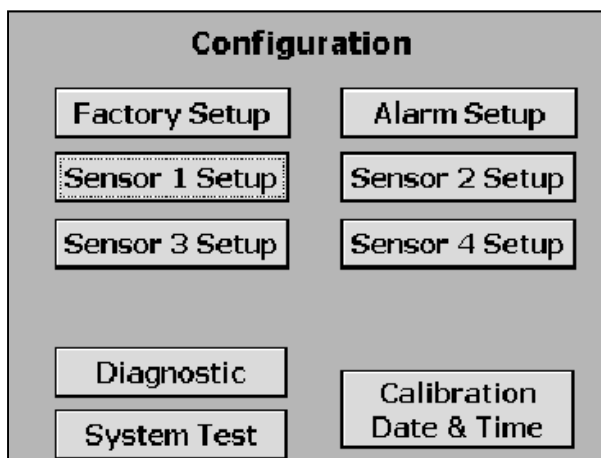
Press " "

Figure 4 – System Configuration Main Screen View
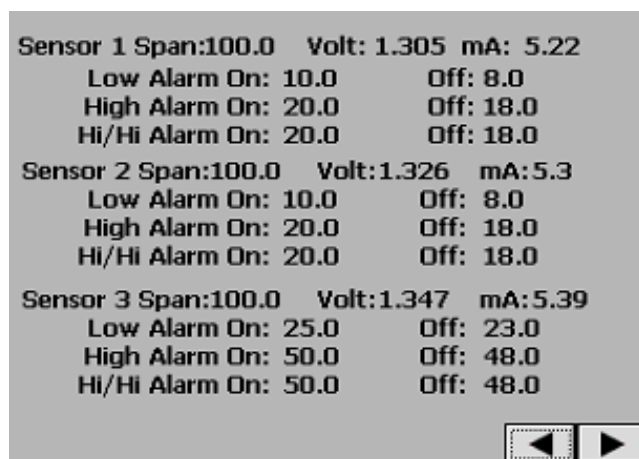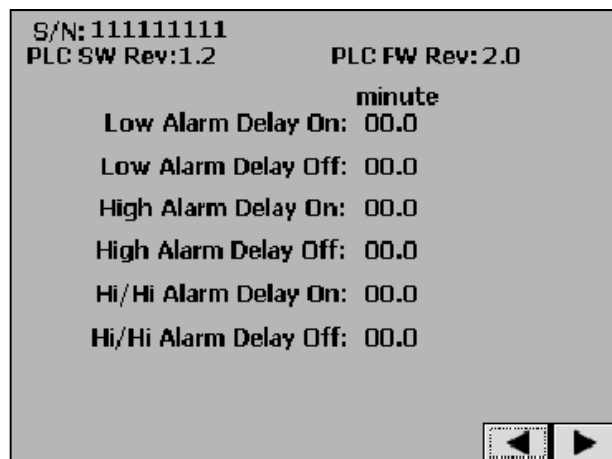
4.1   Diagnostic Information

Figure 5 – Diagnostic Information Screen View

This is a View Only screen. It provides the alarm and sensor setup details that have been entered for this unit. It also shows real time voltage and mA reading. Setup and sensor changes can be made through the passcode protected Alarm and Sensor Setup menu.

4.2   Alarm Setup

Figure 6 – Alarm Setup Screen View

The Passcode *2000* will be required to make changes in this section.

There are three alarm settings: Low alarm, High Alarm and High/High alarm

The low alarm is typically used as a warning level that gas is present but at a safe level. It is not unusual to have trace levels of gas present during maintenance or process operations. A relay is provided for each zone. Determine your application requirement such as fan ventilation.

The high alarm is typically used as an alarm condition for action. A relay is provided for each sensor.

The high/high alarm is common to all sensors and will activate the buzzer and strobe if ordered. A common relay is provided.

DELAY SETUP

The low and high alarm delay settings are as follows:

Delay ON. This is the time, in minutes and seconds, that the relays will delay before activating when the ppm setpoint has been reached. Delay ON is used to suppress a nuisance alarm that may be caused by a spurious or momentary alarm of gas.

Delay OFF. The time, in minutes and seconds, that the relays will stay on after the ppm has dropped below the setpoint. Delay OFF is used to keep ventilation fans running after the sensor has cleared to assist ventilating any areas that may not be clear due to poor ventilation.

FAILSAFE SETUP

Failsafe will determine if the relays are energized or de-energized during a normal operating state (no alarm condition).

If Failsafe is YES, the relay will be energized during a normal operating condition. An alarm or power failure will de-energize the relay to the alarm state.

When in Failsafe mode and during a normal condition, the N.O. contact is closed and the N.C. contacts is open. WIRE ACCORDINGLY.

COMMON Hi/Hi LATCH

Select YES to latch the Hi/Hi relay when it alarms. In this mode, the alarm will need to be manually acknowledged by the Reset button on the Main screen after the gas condition has cleared.

4.3   Sensor Setup

Figure 7 – Sensor Setup Screen View

The Passcode *2000* will be required to make changes in this section.

Gas Name
You can enter the gas name or identifier. This will show on the main screen adjacent to the gas concentration. This has been factory set according to the sensor shipped with this panel.

Span
This will determine the full concentration level of sensor. This is determined by the sensor type and is factory set according to the sensor shipped with this panel.

Low Alarm ON
This will determine the concentration at which the low alarm relay activates. At this setpoint, the screen will flash yellow.

Low Alarm OFF
This will determine the concentration at which the low alarm will turn off. This differential is used to suppress chattering of alarms if the gas concentration is hovering at the setpoint.

The low alarm will clear automatically if the concentration levels drop below the alarm levels.

High Alarm ON
This will determine the concentration at which the high alarm relays activate. At this setpoint, the screen will flash red. The high alarm will clear automatically if the concentration levels drop below the alarm levels.

High Alarm OFF
This will determine the concentration at which the screen will indicate the gas condition has cleared.

High/High Alarm
This will determine the concentration at which the high/high alarm relay and alarms activate. This relay can be latched to be acknowledged after the gas clears.

4.4   Factory Setup

This screen is used to set the number of sensors inputs and enter the serial and firmware data. It is only accessible by a unique user name and passcode.

This panel model can support up to four sensors. If a sensor is being added or removed from this panel, contact the factory with the serial number to update the factory database. The passcode can then be provided.

4.5   Date and Time

The 4200-IG has a real time clock to remind users of impending calibration duties.

The reminder frequency can be entered here. When a calibration is performed, Press the Record calibration icon to initiate reminder countdown timer.

Figure 8 – Date & Time Screen View

4.6   System Test

The Low, High and Common HI/HI relays can be tested for each zone by pressing appropriate Icon will turn green if selected. Push the appropriate alarm level for test.

Figure 9 – System Test Screen View

5.0   SENSOR CALIBRATION

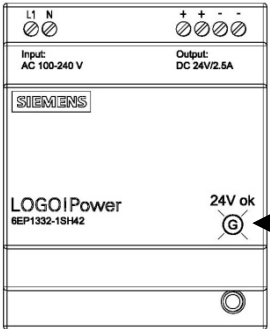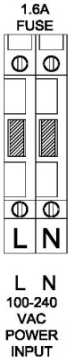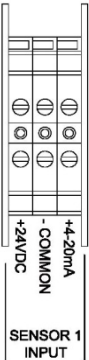Refer to the specific sensor Instruction Manual attached to this manual for the sensor calibration details.

The sensor is factory calibrated and will operate upon installation, however, the sensor response should be verified after installation with a calibration or test gas. Re-calibrate if necessary.

Routine verification of the sensor response and confirmation of the panel alarms and interlocks is recommended. A minimum verification every 4 to 6 months is recommended. Re-calibrate as necessary.

6.0   TROUBLESHOOTING

Main Panel

Green LED	• Confirm the power supply LED is active (Green).
	• Confirm the Power Input is 100-240VAC using a meter. • Confirm if input fuse has blown.
	• Confirm that sensor is wired according to electrical wiring drawing for each sensor.

7.0   DETAILED ELECTRICAL AND DIMENSIONAL DRAWINGS

Drawings are included in this section that are specifc to your model ordered.
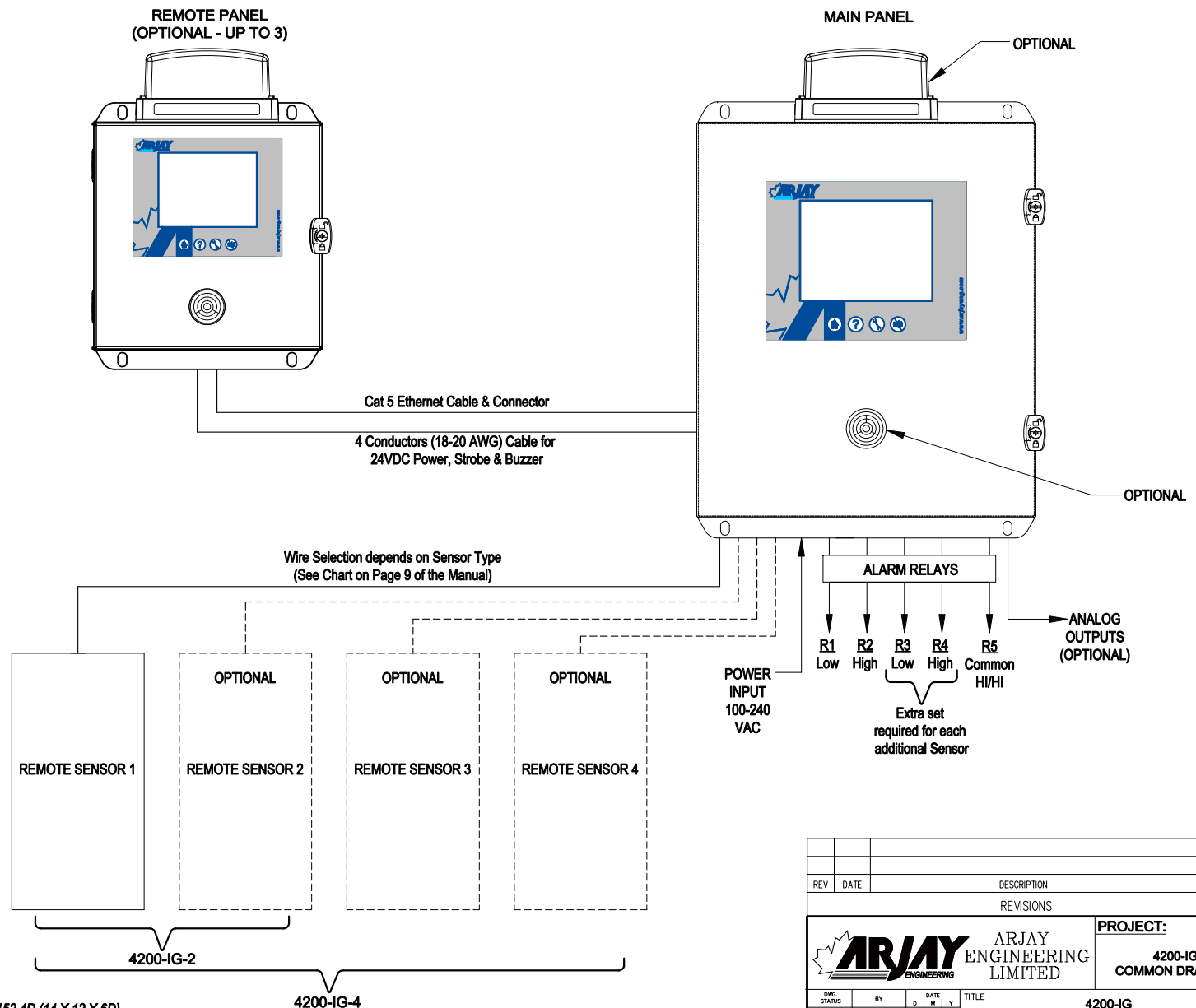
If drawings are not included here, record the serial number on the left outside wall of the main panel and contact:

ARJAY ENGINEERING TECHNICAL SUPPORT

(800) 387-9487

+1 (905) 829-2418

www.arjayeng.com

REMOTE PANEL
(OPTIONAL - UP TO 3)

MAIN PANEL

OPTIONAL

OPTIONAL

Cat 5 Ethernet Cable & Connector

4 Conductors (18-20 AWG) Cable for
24VDC Power, Strobe & Buzzer

OPTIONAL

Wire Selection depends on Sensor Type
(See Chart on Page 9 of the Manual)

ALARM RELAYS

ANALOG
OUTPUTS
(OPTIONAL)

OPTIONAL   OPTIONAL   OPTIONAL

R1	R2	R3	R4	R5
Low	High	Low	High	Common HI/HI

POWER
INPUT
100-240
VAC

Extra set
required for each
additional Sensor

REMOTE SENSOR 1   REMOTE SENSOR 2   REMOTE SENSOR 3   REMOTE SENSOR 4

4200-IG-2

4200-IG-4

NOTES:
1) DIMENSIONS ARE IN mm [inches]
2) TOLERANCE +1mm (.04 INCHES)
3) POLYESTER POWDER BLUE (RAL5015) PAINT.
4) MAIN PANEL: ENCLOSURE IS A EXM 5412 ESCH141206
5) MAIN PANEL: ENCLOSURE DIMENSIONS ARE 355.6 X 304.8 X 152.4D (14 X 12 X 6D)
6) MAIN PANEL: ENCLOSURE MOUNTING DIMENSIONS ARE 374.7 X 254.0 (14.75 x 10)
7) REMOTE PANEL: ENCLOSURE IS A EXM 5412 ESCH8804
8) REMOTE PANEL: ENCLOSURE DIMENSIONS ARE 203.2 X 203.2 X 101.6D (8 X 8 X 4D)
9) REMOTE PANEL: ENCLOSURE MOUNTING DIMENSIONS ARE 222.3 X 152.4 (8.75 x 6)